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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHOI, FRANK I

ART UNIT PAPER NUMBER

1616

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

09/982,702

Applicant(s)

O'REILLY ET AL.

Examiner

Frank I Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 20031112. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-28 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for glutaraldehyde in combination with the appropriate and specified neutralizing agent(s), does not reasonably provide enablement for the entire scope irreversibly deactivatable biocides, including alkynes, or neutralizing agents. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in In re Colianni, 195 USPQ 150, 153 (CCPA 1977), have been clarified by the Board of Patent Appeals and Interferences in Ex parte Forman, 230 USPQ 546 (BPAI 1986), and are summarized in In re Wands (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed Cir. 1988)). Among the factors are the nature of the invention, the state of the prior art, the predictability or lack thereof in the art, the amount of direction or guidance present, the presence or absence of working examples, the breadth of the claims, and the quantity of experimentation needed. The instant disclosure fails to meet the enablement requirement for the following reasons:

The nature of the invention:

The invention is directed to methods of controlling microorganisms in cooling water used in industrial processes, including Fischer-Tropsch processes, by adding to said water a

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deactivatable biocides and a neutralizing agent which irreversibly deactivates the biocide prior disposal of was water.

The state of the prior art and the predictability or lack thereof in the art:

The prior art of record discloses that aldehydes can be deactivated by nitrogen compounds and that glutaraldehyde can also be deactivated by sodium bisulfite or sodium hydroxide. However, the prior art of record does not appear to indicate what other compounds may be used as neutralizing agents or indicate neutralizing agents suitable for deactivating biocidal alkynes. Further, the prior art of record other than for glutaraldehyde does not appear to indicate what amounts would be effective. As such, it appears that one of ordinary skill would not be able to predict from the prior art of record what other compounds would be suitable as deactivatable biocides or as neutralizing agents. Further, even if deactivatable biocides and neutralizing agents were known there still is the issue of determining which neutralizing agents are suitable for which deactivatable biocides. Finally, it must be determined whether the neutralizing agent irreversibly deactivates the biocide.

The amount of direction or guidance present and the presence or absence of working examples:

Other than for aldehydes and alkynes, the Specification appears to give little direction as to appropriate neutralizing agents for deactivatable biocides. Although the Specification mentions that oxidation is an effective means to deactivate virtually any type of biocide, Applicant generally warns that biocides and oxidants have to be chosen carefully to avoid unwanted by products. No direction appears to be given as to how one of ordinary skill in the art would choose the appropriate oxidant to avoid unwanted by products. The Specification indicates that reduction is a suitable method to deactivate a biocide but only provides

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hydrogenation as a method of reduction and other than alkynes does not indicate what other deactivatable biocides are subject to reduction or hydrogenation. Complexing a biocide with a neutralizing agent is described but there is no indication which deactivatable biocides are suitable for complexing or for that matter which neutralizing agent are capable of forming complexes. Further, the Specification does not appear to indicate what other neutralizing agents are suitable for deactivating alkynes and does not appear to indicate that hydrogenation may be used to deactivate aldehydes or that nitrogen containing compounds are suitable for deactivating alkynes. Also, other than for glutaraldehyde there does not appear to be any indication what would be an effective amount of a deactivatable biocide. Finally, other than as indicated above the Specification appears to give limited direction as to what neutralizing agents would irreversibly deactivate the biocides.

The breadth of the claims and the quantity of experimentation needed:

The claims are very broad in that they cover any deactivatable biocide and neutralizing agent which irreversibly deactivates said biocide in any effective amount. As such, and in light of the above, it appears that one of ordinary skill in the art would be required to do undue experimentation in order to determine effective amounts of the biocides and which biocides are irreversibly deactivatable by which neutralizing agents.

Examiner has duly considered Applicant's arguments but deems them unpersuasive.

Applicant acknowledges that there are neutralizing agents which are reversible. As such, this supports the conclusion that undue experimentation would be required to determine which biocides are irreversibly deactivatable by which neutralizing agents. Further, the written description requirement is separate and distinct from the enablement requirement. In re Barker, 194 USPQ 470 (CCPA 1977). Applicant's arguments indicate what the Specification describes,

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however, as indicated above said description does not enable one of ordinary skill in the art to use the invention commensurate in scope with the claims.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 10, 11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Williams et al. (US Pat. 5,641,411).

Williams et al. expressly discloses a method of neutralizing biocides, including glutaraldehyde, with a neutralizer including cysteine, falling within the scope of applicant's claims (Examples 1,2,6,12,13, Claims 1-12).

Alternatively, at the very least the claimed invention is rendered obvious within the meaning of 35 USC 103, because the prior art discloses products and uses that contain the same exact ingredients/components as that of the claimed invention. See *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980). See also *In re May*, 197 USPQ 601, 607 (CCPA 1978); *Ex parte Novitski*, 26 USPQ2d 1389, 1390-91 (Bd Pat. App. & Inter. 1993).

Claims 1-7, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Union Carbide (1999) in view of the acknowledged prior art for the reasons of record set forth in the prior Office Action in further view of Williams et al. and the further reasons below.

Union Carbide teaches that glutaraldehyde is used in virtually every industry where the control of microorganisms in process waters is essential to the quality of processes and products, including water-cooling towers and other recirculating water systems (Pgs. 1, 7). It is taught that the cell walls of all living organisms contain free amine groups that serve as the reactive site for glutaraldehyde attack (Pg. 2). Effective concentrations are taught including concentrations ranging from 5 ppm to 1000 ppm (pg. 3). It is taught that glutaraldehyde can also be deactivated chemically by addition of sodium bisulfite or sodium hydroxide prior to discharge into municipal or industrial sewers or disposal by appropriate means (Pg. 8).

Applicant acknowledges that cooling water is necessary in the Fischer-Tropsch synthesis of liquid fuels and that although cooling water can be recirculated eventually the cooling water must be disposed (Pgs. 1,2). Applicant further acknowledges that cooling water requires the use of biocides to control microbial growth but that contamination of the environment with residual biocides can be a problem (Pg. 2). Further, where biological oxidation facilities are used the biocides in the cooling water disposed can kill or inactivate the microorganisms used in said facility (Pg. 2).

Williams et al. is cited herein for the same reasons as above and is incorporated herein to avoid repetition.

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose a method of inhibiting growth and reproduction of microorganisms in a cooling water system used in an industrial process where a deactivatable biocide is added to the

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cooling water and adding an effective amount of a neutralizing agent to the cooling water to deactivate the biocide before or upon disposal of the cooling water. However, the prior art amply suggests the same as the prior art teaches that glutaraldehyde is a deactivatable biocide and that is desired to deactivate biocides before disposal of cooling water. As such, one of ordinary skill in the art would be motivated to modify the prior art as above with the expectation that method will minimize environmental pollution due to the presence of residual biocides.

Examiner has duly considered Applicant's arguments but deems them unpersuasive and moot in light of the new grounds of rejection.

Applicant argues that Union Carbide teaches that treated solutions of glutaraldehyde should be returned to neutral pH by addition of an inorganic acid, e.g., hydrochloric acid, before disposal by appropriate means. However, Applicant has not shown that addition of the inorganic acid regenerates that glutaraldehyde.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the reference and acknowledged prior art.

Claims 1-7, 9-17, 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Union Carbide (1999) in view of the acknowledged prior art, Quann et al. (US Pat. 4,686,317) and Hitzman et al. (US Pat. 3,642,578) for the reasons of record set forth in the prior Office Action in further view of Williams et al. and the further reasons below.

Union Carbide and the acknowledged prior art are cited for the same reasons as above and are incorporated herein to avoid repetition.

Quann et al. teaches methods of removing oxygenated compounds, i.e. aldehydes, produced during Fischer-Tropsch process from the desired light olefinic compounds by distillation (See entire document).

Hitzman et al. teaches that nitrogen containing compounds convert biodeleterious aldehydes which are produced from Fischer-Tropsch synthesis to products which are used by microbes as feedstocks (Column 1, lines 47-56, Column 3, lines 66-68, Column 3, lines 73-75, Column 4, lines 1-17).

Williams et al. is cited herein for the same reasons as above and is incorporated herein to avoid repetition.

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose a method of inhibiting growth and reproduction of microorganisms in a cooling water system used in an industrial process where a deactivatable biocide is added to the cooling water and adding an effective amount of a neutralizing agent to the cooling water to deactivate the biocide before or upon disposal of the cooling water. However, the prior art amply suggests the same as the prior art teaches that glutaraldehyde is a deactivatable biocide, that nitrogen compounds deactivate biodeleterious aldehydes, that it is desired to deactivate biocides before disposal of cooling water and that the biodeleterious aldehydes can be produced in-situ and separated from the desired Fischer-Tropsch products. As such, one of ordinary skill in the art would be motivated to modify the prior art as above with the expectation that method will minimize environmental pollution due to the presence of residual biocides and that the biocidal aldehydes can be conveniently obtained from the same process which produces the desired Fischer-Tropsch products.

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Examiner has duly considered Applicant's arguments but deems them unpersuasive for the same reasons as above.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the reference and acknowledged prior art.

Conclusion

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 11/12/2003 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.\

A facsimile center has been established in Technology Center 1600. The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM. The telecopier number for accessing the facsimile machine is (703) 872-9306.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Choi whose telephone number is (703) 308-0067. Examiner maintains a flexible schedule. However, Examiner may generally be reached Monday-Friday, 8:00 am – 5:30 pm (EST), except the first Friday of the each biweek which is Examiner's normally scheduled day off.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Thurman Page, can be reached on (703) 308-2927. Additionally, Technology Center 1600's Receptionist and Customer Service can be reached at (703) 308-1235 and (703) 308-0198, respectively.

FIC

January 12, 2004



JOHN PAK
PRIMARY EXAMINER
GROUP 1600